

AMERICAN JOURNAL OF MATHEMATICS

FOUNDED BY THE JOHNS HOPKINS UNIVERSITY

EDITED BY

JUN-ICHI IGUSA
THE JOHNS HOPKINS UNIVERSITY

J. H. SAMPSON
THE JOHNS HOPKINS UNIVERSITY

SPENCER J. BLOCH
THE UNIVERSITY OF CHICAGO

VICTOR GUILLEMIN
THE MASSACHUSETTS INSTITUTE OF TECHNOLOGY

WITH THE COOPERATION OF

H. BASS
E. BOMBIERI
W. L. CHOW
K. KODAIRA

J. MOSER
D. MUMFORD
T. ONO

I. SATAKE
J.-P. SERRE
I. M. SINGER
A. WEIL

PUBLISHED UNDER THE AUSPICES OF

THE JOHNS HOPKINS UNIVERSITY

WITH THE EDITORIAL COOPERATION OF

THE AMERICAN MATHEMATICAL SOCIETY

Volume 105, 1983

THE JOHNS HOPKINS UNIVERSITY PRESS
BALTIMORE, MARYLAND 21218
U. S. A.

AMERICAN JOURNAL OF MATHEMATICS ISSN 0002-9327

Volume 105, 1983

Copyright © 1983 by The Johns Hopkins University Press

All rights reserved. No portion of this journal may be reproduced, by any process or technique, without the formal consent of the editors and publisher except copies of the article may be made for personal or internal use on the condition that the copier pay a fee of \$1.50 per copy through the Copyright Clearance Center, Inc., 21 Congress Street, Salem, Massachusetts 01970, for copying beyond that permitted by Sections 107 or 108 of the U.S. Copyright Law. This consent does not extend to other kinds of copying, such as copying for general distribution, for advertising or promotional purposes, for creating new collective works, or for resale. It is our policy to require the assignment of copyright from all contributors. 0002-9327/83 \$1.50.

The AMERICAN JOURNAL OF MATHEMATICS is published six times annually: February, April, June, August, October, and December.

Information for Subscribers

Annual subscription prices: Institutions, \$80.00; Individuals, \$25.00. Add \$4.50 for postage for subscriptions mailed outside the U.S.A. Single issue price: \$12.00.

Address changes, subscription inquiries, and all business communications should be sent to: The Johns Hopkins University Press, Journals Division, Whitehead Hall, 34th and Charles Streets, Baltimore, Maryland 21218.

Claims for replacement of missing issues must be received within 3 months (6 months in the case of foreign subscribers) following publication of the issue.

Postmaster: Please send form 3579 to the above address.

Information for Authors:

Authors may submit manuscripts for publication to any of the four editors, whose addresses are as follows:

Professor Jun-Ichi Igusa, Department of Mathematics, The Johns Hopkins University, Baltimore, Maryland 21218.

Professor J. H. Sampson, Department of Mathematics, The Johns Hopkins University, Baltimore, Maryland 21218.

Professor Victor Guillemin, Department of Mathematics, The Massachusetts Institute of Technology, Cambridge, Massachusetts 02139.

Professor Spencer J. Bloch, Department of Mathematics, The University of Chicago, Chicago, Illinois 60637.

Manuscripts may be submitted in English, French, German, Italian or Spanish, preferably in duplicate. Authors should also retain a complete copy. Please include a letter of submittal with each manuscript.

Kindly consult the inside back cover for essential instructions regarding preparation of manuscripts.

Reprints: 75 reprints with cover, or 50 each for authors of joint articles, will be furnished free to the authors of articles published in the Journal. Additional reprints may be ordered from The Johns Hopkins University Press.

Printed at The Sheridan Press, Hanover, Pa. U.S.A.

Second-class postage paid at Baltimore, Maryland and at additional mailing offices.

Index to Volume 105

ABHYANKAR, SHREERAM S. On a question of Mumford	1455
ALLARD, WILLIAM K. On the first and second variation of a parametric integral	1255
ALNIACIK, KAMIL. On Mahler's U -numbers	1347
BEDFORD, ERIC and BERNARD GAVEAU. Envelopes of holomorphy of certain 2-spheres in \mathbb{C}^{2*}	975
BERENSTEIN, CARLOS A. and MEHRDAD SHAHSHAHANI. Harmonic analysis and the Pompeiu problem	1217
BERS, LIPMAN. On iterates of hyperbolic transformations of Teichmüller space	1
BLOCH, SPENCER and V. SRINIVAS. Remarks on correspondences and algebraic cycles	1235
BOMBIERI, ENRICO. On Weil's "Théorème de décomposition"	295
BOREL, A. and H. GARLAND. Laplacian and the discrete spectrum of an arithmetic group	309
CARTER, DAVID and GORDON KELLER. Bounded elementary generation of $SL_n(\theta)$	673
CASSOU-NOGUÈS, PIERRETTE. Prolongement de certaines séries de Dirichlet	13
CHERN, SHIUNG-SHEN and JON GORDON WOLFSON. Minimal surfaces by moving frames	59
COATES, JOHN and CATHERINE GOLDSTEIN. Some remarks on the main conjecture for elliptic curves with complex multiplication	337
CRAW, IAN G., IAIN RAEBURN, and JOSEPH L. TAYLOR. Automorphisms of Azumaya algebras over a commutative Banach algebra	815
DAMIANO, DAVID B. Webs and characteristic forms of Grassmann manifolds	1325
DOVERMANN, KARL HEINZ and TED PETRIE. An induction theorem for equivariant surgery	1369
DRINFELD, V. G. Two-dimensional l -adic representations of the fundamental group of a curve over a finite field and automorphic forms on $GL(2)$	85
DWORK, BERNARD. On the Boyarsky principle	115
ELMAN, RICHARD, T. Y. LAM, J.-P. TIGNOL, and ADRIAN R. WADSWORTH. Witt rings and Brauer groups under multi-quadratic extensions, I	1119

FARRELL, F. T. and W. C. HSIANG. Topological characterization of flat and almost flat Riemannian manifolds M^n ($n \neq 3, 4$)	641
GARLAND, H. See A. Borel and H. Garland, page 309.	
GARRETT, PAUL B. Arithmetic and structure of automorphic forms on bounded symmetric domains, I	1171
———, Arithmetic and structure of automorphic forms on bounded symmetric domains, II	1195
GAVEAU, BERNARD. See Eric Bedford and Bernard Gaveau, page 975.	
GOLDSTEIN, CATHERINE. See John Coates and Catherine Goldstein, page 337.	
GROMOV, M. and V. D. MILMAN. A topological application of the isoperimetric inequality	843
HAILE, DARRELL E., RICHARD G. LARSON, and MOSS E. SWEEDLER. A new invariant for \mathbf{C} over \mathbf{R} : almost invertible cohomology theory and the classification of idempotent cohomology classes and algebras by partially ordered sets with a Galois group action	689
HANSEN, JOHAN. A connectedness theorem for flagmanifolds and Grassmannians	633
HSIANG, W. C. See F. T. Farrell and W. C. Hsiang, page 641.	
IGUSA, JUN-ICHI. Multiplicity one theorem and problems related to Jacobi's formula	157
IWASAWA, KENKICHI. On cohomology groups of units for \mathbf{Z}_p -extensions	189
JACQUET, H., I. I. PIATETSKII-SHAPIRO, and J. S. SHALIKA. Rankin-Selberg convolutions	367
KATZ, GABRIEL. Some realization theorems in equivariant L -theory and calculations of G -signature	939
KATZ, NICHOLAS M. Wild ramification and some problems of "independence of ℓ "	201
KELLER, GORDON. See David Carter and Gordon Keller, page 673.	
KOLLÁR, J. and T. MATSUSAKA. Riemann-Roch type inequalities	229
LAM, T. Y. See Richard Elman, T. Y. Lam, J.-P. Tignol, and Adrian R. Wadsworth, page 1119.	
LANGLANDS, R. P. Orbital integrals on forms of $SL(3)$, I	465
LARSON, RICHARD G. See Darrell E. Haile, Richard G. Larson, and Moss E. Sweedler, page 689.	
LEE, KYUNG BAI. Aspherical manifolds with virtually 3-step nilpotent fundamental group	1435
LIN, JAMES P. Higher order operations in the mod 2 cohomology of finite H -spaces	855

MARCUS, BRIAN. Topological conjugacy of horocycle flows	623
MATSUSAKA, T. See T. Kollár and T. Matsusaka, page 229.	
MAZUR, B. and A. WILES. Analogies between function fields and number fields	507
MILMAN, V. D. See M. Cromov and V. D. Milman, page 843.	
MITCHELL, BARRY. Low dimensional group cohomology as mo- noidal structures.	1049
MOK, NGAIMING and BUN WONG. Characterization of bounded do- mains covering Zariski dense subsets of compact complex spaces	1481
PETRIE, TED. See Karl Heinz Dovermann and Ted Petrie, page 1369.	
PIATETSKII-SHAPIRO, I. I. See H. Jacquet, I. I. Piatetskii-Shapiro, and J. S. Shalika, page 367.	
PLUMSTEAD, BARTON. The conjectures of Eisenbud and Evans. . .	1417
PRASAD, GOPAL and M. S. RAGHUNATHAN. Tame subgroup of a semi-simple group over a local field	1023
RAEBURN, IAIN. See Ian G. Craw, Iain Raeburn, and Joseph L. Taylor, page 815.	
RAGHUNATHAN, M. S. See Gopal Prasad and M. S. Raghunathan, page 1023.	
RIBET, KENNETH A. Hodge classes on certain types of Abelian varieties.	523
SCHOCHET, CLAUDE. Homogeneous extensions of C^* -algebras and K -theory II	595
SHALIKA, J. A. See H. Jacquet, I. I. Piatetskii-Shapiro and J. A. Shalika, page 367.	
SHAHSHAHANI, MEHRDAD. See Carlos A. Berenstein and Mehrdad Shahshahani, page 1217.	
SHIMURA, GORO. Algebraic relations between critical values of zeta functions and inner products	253
SIEGEL, P. H. Witt spaces: A geometric cycle theory for KO -homol- ogy at odd primes	1067
SILVER, DANIEL. Finding stable boundaries for open five-dimen- sional manifolds	1309
STRÖGREN, PETER. A remark on the maximal function for measures in \mathbb{R}^n	
SRINIVAS, V. See Spencer Bloch and V. Srinivas, page 1235.	
STANTON, CHARLES M. Polydiscs in the spectra of uniform algebras . .	1107
SWEEDLER, MOSS E. See Darrell E. Haile, Richard G. Larson and Moss E. Sweedler, page 689.	

TATE, J. Variation of the canonical height of a point depending on a parameter	287
TAYLOR, JOSEPH L. See Ian G. Craw, Iain Raeburn, and Joseph L. Taylor, page 815.	
TIGNOL, J.-P. See Richard Elman, T. Y. Lam, J.-P. Tignol, and Adrian R. Wadsworth, page 1119.	
TITS, J. Moufang octagons and the Ree groups of type 2F_4	539
TUNNELL, JERROLD. Local ϵ -factors and characters of $GL(2)$	1277
VITULLI, MARIE A. The hyperplane sections of weakly normal varieties	1357
WADSWORTH, ADRIAN R. See Richard Elman, T. Y. Lam, J.-P. Tignol, and Adrian R. Wadsworth, page 1119.	
WILES, A. See B. Mazur and A. Wiles, page 507.	
WOLFSON, JON GORDON. See Shiing-shen Chern and Jon Gordon Wolfson, page 59.	
WONG, BUN. See Ngaiming Mok and Bun Wong, page 1481.	
ZAFRAN, MISHA. Interpolation of multiplier spaces	1405
ZIMMER, ROBERT J. Curvature of leaves in amenable foliations ...	1011

